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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,500	11/06/2001	Ravi Kumar DVJ	P04950 (NATI15-04950)	6797

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Docket Clerk
P.O. Drawer 800889
Dallas, TX 75380

EXAMINER
KINKEAD, ARNOLD M

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/992,500	DVJ, RAVI KUMAR	
	Examiner	Art Unit	
	Arnold M Kinkead	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,10,15,24,29 and 34-38* is/are rejected.

7)☒ Claim(s) *2-9,11-14,16-23,25-28, and 30-33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments with respect to claims rejected under the non-final rejection, mailed 05-20-04, has been considered, however, with regards the central issue of whether the independent claims 1,15,29,37 and 38 recite adjusting a current based on a plurality of ranges for the divider value...this is not what is recited. All the independent claims recite adjusting a pump current based...on at least one of: one of a first plurality of ranges in which a first divider value lies...

The examiner has interpreted this to mean at least one range for the particular divider value...the operational range as identified in the rejection below.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 10,15, 24, 29, 34,35,36,37, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Llewellyn(US 5,339,050 of record) and in view of Davis et al (US 5,420,545) , Olgaard et al(US 5,939,949) and further in view of Lada, Jr. et al.(US 5,142,247).

The reference by Llewellyn discloses a PLL synthesizer(see figure 2 and col. 5, lines 15-31) which comprises a VCO(210) that receives a control voltage stored on loop filter(209); the vco generates an output clock signal(Fout) determined by the control voltage. A first frequency divider(206) divides the output clock signal to produce a first divided clock signal (Fout/M.)

A second frequency divider(202) is shown to divide a reference frequency Fin by a second divider value N to produce a second divided clock signal (Fin/N.)

A phase – frequency detector(207) is shown for comparing the first and second divided clock signals and generates an UP or DOWN control signal based on the comparison.

A charge pump (208) is shown receiving the UP/DOWN control signals to increase/decrease the frequency control voltage on the loop filter, for charging and discharging the LPF, respectively.. A loop response circuit including DAC(220) and controller(not shown) allows for the Pump current to be adjusted as a function of the divider values(see col. 5, lines 15-31);this suggests that the there is a plurality of ranges from which M is selected(F bit word) so as to allow proper division factor and corresponding pump current magnitude .

Also, noted in col. 2, lines 47-65, M, for example, *does have an operational range* and thus the pump current must be adjusted as the loop goes through coarse tuning and fine tuning with the values for M changing to allow for the desired locking to occur and the current being adjusted according to the varying operational modes of the PLL and divider values within a range. As the loop goes from coarse tune to fine tune, the corresponding range for M would change, for example. The method steps being inherent.

The reference does not show control of the resistance in the loop filter(claims 10, and 24) with the divider value changes, however, this is a conventional PLL

LPFcontrol and will be highlighted in the Davis et al reference. The reference also does not describe an integrated circuit for the PLL and a processor operating at a plurality of clock speeds(claim 15). With regards the last two items, integration of these PLL circuits is common practice due to the advances and requirements made in the field. The integration of the PLL elements allow for a more compact package and easier process control as the elements can be fabricated with similar characteristics on each IC substrate;- see for example, the reference to Olgaard et al(US 5,939,949), the summary and background description of the PLL I.C. With regards a processor operating at a plurality of clock speeds, these PLL' s are used in systems where a number of clock signals/selectable frequencies are required; see cite to Lada et al, col. 1, lines 33-59 for a data processing system and variable frequency PLL.

With regards the Davis et al reference, figures 1 and 2 dislcose a PLL(10) which comprises a loop filter(see figure 2) whereby as noted in cols. 3-4, in fastlock mode the dividers are changed and also, the loop filter resistance is also changed as a consequence of the dividers being changed so as to allow for a quicker lock response.

In light of the above it would have been obvious for one of ordinary skill in the art at the time of the invention to realize that the PLL of Llewellyn could be implemented as an integrated device, this allowing for a compact and more stable PLL circuit; the PLL integrated circuit is conventional and Olgaard et al is relied upon for showing an example of such. The use of such circuits in systems with processors requiring different clock speeds for synchronizing is conventional and suggested by Lada et al. The Davis et al reference serves to highlight the fact that the loop filter is a factor when the divider values are changed to

allow for quicker loop response and thus faster lock times, this in addition to pump current control would be part of the Llewellyn PLL to provide a more rapid synchronization which is desireable.

Allowable Subject Matter

3. Claims 2-9,11-14,16-23, 25-28, and 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The examiner could not find fair suggestion in the prior art for the relationships between pump current levels and divider values,i.e., setting Ic to minimum and other current levels when N is in a range...or setting the resistance R based on the dividers being in a range....

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory

action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold M Kinkead whose telephone number is 703-305-3486. The examiner can normally be reached on Mon-Fri, 8:30 am -5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner' s supervisor, Robert Pascal can be reached on 703-308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Arnold M Kinkead
Primary Examiner
Art Unit 2817

Arnold Kinkead

Nov. 10-2004